

AMATEUR SATELLITE REPORT

AMSAT's Newsletter for the Amateur Space Program.



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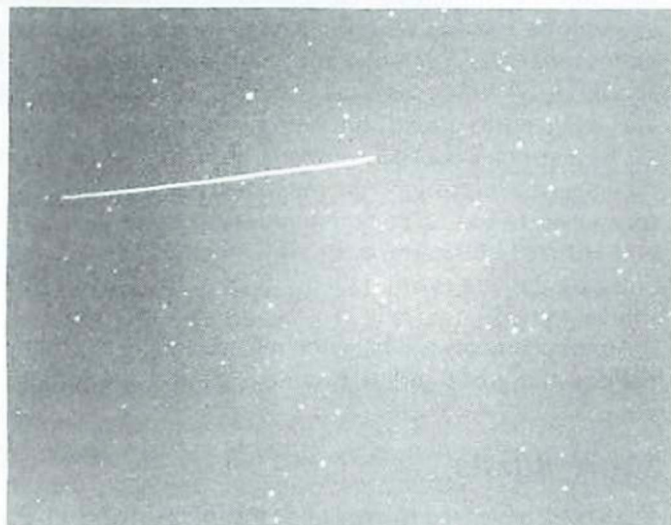
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Editor: Vern Riportella, WA2LQQ
Contr. Editor: George Johnson, W0MD
Harold Winard, KB2M
Managing Editor: Bob Myers, W1XT
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Space Shuttle Ham Activity Spurs Radio, Space Interest

Planners, observers and participants in the highly successful Amateur Radio experiment performed by Tony England, W0ORE, and others aboard Challenger are virtually unanimous in their acclamation of the event. Tens of thousands listened to various radio stations to hear live Shuttle audio via NASA communication channels. Other thousands heard Tony and even Mission Commander Gordon "Gordo" Fullerton on 2-meter FM Amateur Radio frequencies. Still more tens of thousands watched the skies during evening passes to discern the bright man-made comet whiz across the sky from horizon to horizon in what seemed just a few seconds even if it was several minutes on most passes. Millions watching news broadcasts and reading newspapers were aware that Amateur Radio was a part of this shuttle mission. And a few fortunate clubs and individuals actually made contact with the shuttle via 2-meters. All this on the second-ever ham-in-space episode.

Liftoff was from Cape Canaveral at 21:00 UTC on July 29. The launch had been postponed from July 12 because of a balky computer. It was due to launch at 19:23 on July 29 but further minor problems forced the delay until 21:00.



Shuttle Challenger was a brilliant moving star over New York on the evening of 3 Aug. 85. In this 10 second exposure the Shuttle is seen against a star field while W0ORE worked 2 meters.



AMSAT President, Vern "Rip" Riportella, (left) WA2LQQ, presents AMSAT proclamation plaque to President Emeritus Dr. Tom Clark, W3IWI, at the Central States VHF Society Conference in Tulsa, OK 27 July 85.

If the mission was to be judged by its first five minutes, it would have seemed like a big zero (or worse) was about to be hatched. Yet after the problems encountered in liftoff (probably just faulty sensors) were overcome, the business of flying the most ambitious space science mission in history got into full swing. When the first 2-meter SSTV signals were heard on orbit 47, the word spread quickly that the operation was under way. W0ORE began keeping QSO skeds with club stations and youth groups around the country. Video was exchanged with the JPL club in Pasadena, WA6VIA, the Johnson Space Center Club in Houston, W5RRR, and the Goddard Space Flight Center in Greenbelt, WA3NAN. Later open-field QSOs were sought by the astronaut and thousands responded with a deluge of rf.

Among AMSAT members known to have successfully QSO'd Tony were W2RS and K2OIJ (both in N.J.) and K0RZ in Colorado.

Tracking the shuttle would have been difficult had it not been for the timely Kepler data updates provided by NASA's Public Affairs officer at JSC, Chuck Biggs, KC5RG. Most of the pre-mission planning data went by the boards since as a result of the launch anomaly they never attained the full 387 km altitude planned. Rather they hovered in the 300 km range throughout the mission. The ground track maps distributed widely by AMSAT were mostly relegated to souvenir status as a result. Nevertheless, most persons found the shuttle with little difficulty. If they didn't have their

own tracking computer and software, most knew how to obtain the information by inquiring on local repeaters. The folks at WA3NAN did their usual fantastic job at keeping the world in touch with the shuttle. Similarly, W1AW bulletins were especially closely monitored for late-breaking shuttle news during the eight-day mission.

The inevitable comparison between the W00RE and W5LFL missions was often made during the flight. The consensus was strong that we had learned a good lesson from the occasional abuses of the LFL flight and that the present situation was far superior in terms of organization and minimal disruption/confusion.

Grumbling about the lack of open QSO time was minimal and virtually absent during the last couple of days when many passes included voice QSOs. Contacts were made throughout the world by W00RE. Clubs and individuals in England, Israel and elsewhere got through in fine shape. At the request of BRAMSAT, the Brasil AMSAT organization, a request was made for Tony to leave his SSTV beacon on at all times that voice communications were not on so South American Amateurs could be assured of hearing the signals. This was graciously accomplished by Tony.

NASA has requested Amateurs to help set the stage for the next ham-in-space mission by supplying NASA with documentary evidence of the positive effect the W00RE activity had on the community. Newspaper clippings, photographs and other shuttle/W00RE related material should be sent to ASR, Editorial Office, P.O. Box 177, Warwick, N.Y., 10990. We'll make sure it gets into the right hands at NASA to insure we get another ham-in-space flight soon.

AMSAT and ARRL congratulate all those who took part in the planning and execution of this superb mission. It has taken us a long, long way down the road towards greater space-awareness in Amateur Radio and has helped manifestly to tell Amateur Radio's positive story to the public at large. Special note goes to Bill Tynan, W3XO, AMSAT's VP-Manned Spaceflight, for lending his expertise to the effort.

New AO-10 Operating Schedule In Effect

As anticipated, the new restricted-use operating schedule was put into effect by command station ZL1AOX early this month. The exact cutover date was slipped from August 1 to August 5 to allow a few extra days for repositioning the satellite. The new schedule is:

Off	040 - 189
Mode L	190 - 206
Mode B	207 - 039

The ten extra counts of Mode B time (as compared to the previously announced cutoff of 29) is an experiment according to ZL1AOX. It will be carried at this extended level for as long as battery condition allows, said Ian Ashley, ZL1AOX.

Also changing with the new schedule is the use of the 2 meter omni antenna. Its use now extends from MA 45 to 184. This increase likely reflects the results of experiments last month to evaluate the effectiveness of the omni compared to the high gain array during portions of the orbit

when the latter is severely off-pointed. This schedule and antenna protocol will likely remain in effect until early September according to AMSAT officials. Once the eclipse period is passed, normally excellent operating conditions are expected to return. The period of October and November should be some of the best experienced to date. Also, with the latitude of apogee progressing further south, new DX vistas will be opening every day.

Colorado Group to Host Annual Meeting, Space Symposium

In a surprise change of direction, it will be Colorado, not Texas that hosts the AMSAT Annual Meeting and Third Annual Space Symposium for 1985. This announcement was made Tuesday, August 6 when it became clear the option to hold the meetings in Texas was no longer open.

The meetings have been firmly scheduled for the Denver-Boulder area with The Space Symposium and Annual Meeting on Saturday, November 9. The Autumn Board of Directors meeting will be held in the same vicinity on Sunday, November 10.

After last year's highly successful meeting in Los Angeles, an ad hoc group representing the North Texas area said it would be interested in holding the 1985 meeting in their area. They submitted a proposal to AMSAT and hoped to have an answer from the Board during its Spring meeting in Dayton. However, a group from South Texas appeared on the scene to compete for the right to hold the meeting in the Houston area.

A request for proposal was issued to both groups so each would have a common set of requirements against which to bid. However, both groups "no bid" after the process pushed a turn-on date beyond that they could accommodate they said.

Enter the Colorado group. Getting wind of the Texas "no-bid" situation, groups from three new cities eagerly stepped forward to ask to hold the meeting in its area. In the end, however, it was evidence of teamwork and depth that convinced AMSAT to hold the meeting in Colorado for 1985.

Molly Hardman, N3CHZ, has been named to head up the Project Committee as General Chairperson. Molly said she will be naming other managers soon to handle programs, prizes, accommodations, transportation and all the sundry issues which need to be addressed. Upwards of 200 are expected to attend this year's meeting.

Ms. Hardman issued a call for papers for the Third Annual Space Symposium. She asked that a letter of intent be forwarded to her at her home address: Molly Hardman, N3CHZ, 3994 Promontory Ct., Boulder, CO, 80301. Molly will pass the letters on to the programs chairperson when one is named.

Announcements will be made regarding hotel accommodations and group airline discounts as they are firmed.

Short Bursts

- AMSAT is pleased to announce the following Area Coordinator (AC) and Assistant Area Coordinator (AAC) appointments. Bob Myers, KB4AKQ, AAC for South Carolina; Hank

Fitz, WB4URU, AAC for Florida; Millard Croll, AAC for Pennsylvania. Meanwhile, Ohio AAC Eric Rosenberg, WA6YBT, has moved to Harrisburg, PA, and has been re-assigned as AAC for PA. Congratulations to all the new and re-newed A-Team members!

- John Champa, K8OCL, is wondering aloud if anyone is interested in Shuttle 51F mission patches. John says they could be made available for \$5 a crack. Let him know your interest please. A SASE always helps. Write: John Champa, K8OCL, 7800 Hartwell Street, Dearborn, MI, 48126.

- The RS satellites have been off because of eclipses according to PAØDLO who quotes UA3CR. PAØDLO also states that ISKRA 4 will not be launched this year but rather early 1986. There will be no transponder aboard according to this report. A beacon is possible but no frequency has yet been specified.

- Ed Steeb, WA2RDE, of Buffalo, N.Y. will be heading up a new project to keep track of callsign prefixes that appear on AO-10. The list will provide a fair reckoning of how many countries are on or have been on AO-10. The RDE DX tally will be published here periodically.

- On a related note, Don Knollinger, WB8ZTV, will be heading up a Gateway Project team soon. His main function will be to organize gateway activities and to promote interesting and useful events through them.

- The Central States VHF Society has presented AMSAT with a \$400 donation symbolic of its enthusiastic support of the Amateur Space Program. CSVHFS President Charlie Calhoun, WØRRY, presented the check to AMSAT President Vern Riportella, WA2LQQ, at the CSVHFS Conference Banquet in Tulsa on July 27.

TAPR TNC 2 Available Soon

Tucson Amateur Packet Radio is pleased to announce the availability of the new TAPR TNC 2. In field testing since January, it is now ready for you!

Effective Monday, August 19th, the TAPR Office will be accepting orders and, for the first week, will have extended hours (9 AM until 9 PM Pacific Daylight Time - 12 NOON until 12 MIDNITE for you Easterners). (These extended hours are possible through the participation of volunteers, some of whom are travelling to Tucson from all over the country to assist you in obtaining a TNC 2.)

280 TNC 2 kits will be ready for shipment on or about August 19th. All parts are in hand (and boxed!) EXCEPT

a) the manual, which is at the printers and is expected back on the 16th, and

b) the cabinet end plates, which will ship to TAPR on or before the 10th of September. The first units will be shipped WITHOUT the cabinet end plates; the end plates will be sent to TNC 2 owners as soon as TAPR receives them.

The price for TNC 2 is \$185 plus \$10 S & H. A credit card order incurs a 3% surcharge (that's what the bank charges us) for a total of \$200.85. Arizona residents must add tax, of course.

To order your TNC 2 kit, follow these simple rules:

- 1) Call the TAPR Office at (602) 746-1166
- 2) Have the following information available
 - * Your Name
 - * Your UPS shipping address (no PO Boxes, please)
 - * A DAYTIME telephone number at which you can be reached
 - * Your VISA or MasterCard number and expiration date
- 3) Two shipping labels (one for the TNC 2, one for the cabinet end plates) will be filled out WHILE YOU ARE ON THE PHONE.
- 4) Your credit card slip will be made out and read back to you.
- 5) You will be assigned a sequential order number. Number 101 means you will be shipped the 101st TNC 2 kit.

Due to limited supply and expected large demand, only one kit per person and one kit per call may be ordered.

After Office hours, an automatic answering machine will be connected to the telephone line. IT WILL NOT RECORD MESSAGES! It will, however, advise of the day's order status and shipping status by order number. Thus, in less than a minute, you can find out if your order was shipped, if any orders are still being taken for the following day, and how many TNC 2s are still available.

We hope this procedure minimizes any inconvenience to you, and we will do our best to ensure that no orders are misplaced.

IF OUR SUPPLIERS DON'T SLIP IN THEIR SHIPMENTS TO US, an additional 300 kits will be available in mid-September. If you require multiple units, or miss out on the 280 set for August, you may order against the September shipments. Thus, after the initial 280 units, it will be "business as usual."

Thank you for your continued support of TAPR and The Packet Radio Revolution! (For more details on what is in the TNC2, see your August QST on the cover and in the NK6K article — W3IWI).



Jim McKim, W0CY (left) and Byron Lindsey, W4BIW in the AMSAT booth at the Atlanta Hamfest July 6. Banner was made by John Clowe, W4ZPG and his XYL Margie. W3XO and W4DAQ were on hand to help out.

Tom Larson, N1CHM, To Manage AMSAT Video Library

Tom Larson, N1CHM, of Dover, Massachusetts will be picking up responsibility for the AMSAT Video Tape Library it was announced recently. He will assume the manager's job upon the retirement of Roger Johnson, WB0GAI, from that post at the end of August. Roger is taking on new professional responsibilities in connection with his medical practice and asked to be replaced. Tom responded with just the right credentials and was appointed last week to the post.

Tom is the owner of an audio-visual production company in Boston. He says he will alert members to borrowing procedures and address in the near future. Until 31 August, however, members may continue to borrow tapes from the library using the Greeley Colorado address of WB0GAI.

Congratulations and thanks to Tom Larson, N1CHM, on his new assignment!

Director Nominees Number Seven

AMSAT has announced the nominees for Director. The nomination period closed on July 31. The nominees are:

John Browning, W6SP*	Rancho Palos Verdes, CA.
Gordon Hardman, KE3D	Boulder, CO.
Jan King, W3GEY*	Boulder, CO.
Julian Macassey, N6ARE	Pasadena, CA.
Andy MacAllister, WA5ZIB	Pearland, TX
Harold Price, NK6K	Redondo Beach, CA.
Paul Roemer, KG6LC	Manchester, N.H.

Two Directors opted to not seek reelection: John Henry, VE2VQ and John Pronko, W6XN. This guarantees at least two new Directors on the Board this time, the first time that has occurred in many years. Election ballots will be mailed from AMSAT HQ in the next few weeks to all current members.

*Incumbent

Orbit Predictions By KA9Q

Satellite	OSCAR-9
Catalog number:	12888
Epoch time:	85215.10066952
	Sat Aug 3 02:24:57.846 1985 UTC
Element set:	781
Inclination:	97.6340 deg
RA of node:	203.8600 deg
Eccentricity:	0.0003773
Arg of perigee:	100.8266 deg
Mean anomaly:	259.3439 deg
Mean motion:	15.27474034 rev/day
Decay rate:	1.376e-05 rev/day ²
Epoch rev:	21239
Semi major axis:	6858.469 km
Anom period:	94.273288 min
Apogee:	503.178 km
Perigee:	498.003 km
Ref perigee:	2771.11897427
	Sat Aug 3 02:51:19.376 1985 UTC
Beacon:	145.8250 MHz

Satellite	OSCAR-10
Catalog number:	14129
Epoch time:	85201.53564595
	Sat Jul 20 12:51:19.810 1985 UTC
Element set:	190
Inclination:	26.2703 deg
RA of node:	128.5929 deg
Eccentricity:	0.5970867
Arg of perigee:	29.8414 deg
Mean anomaly:	353.5990 deg
Mean motion:	2.05857721 rev/day
Decay rate:	-4.3e-07 rev/day ²
Epoch rev:	1582
Semi major axis:	26105.323 km
Anom period:	699.512262 min
Apogee:	35315.356 km
Perigee:	4141.074 km
Ref perigee:	2757.54428325
	Sat Jul 20 13:03:46.73 1985 UTC
Translate freq:	581.0047 MHz
Invert:	1
Beacon:	145.8100 MHz

Satellite	OSCAR-11
Catalog number:	14781
Epoch time:	85206.24726934
	Thu Jul 25 05:56:04.70 1985 UTC
Element set:	80
Inclination:	98.1904 deg
RA of node:	272.0005 deg
Eccentricity:	0.0014497
Arg of perigee:	103.8232 deg
Mean anomaly:	256.4583 deg
Mean motion:	14.61981488 rev/day
Decay rate:	7.6e-07 rev/day ²
Epoch rev:	7459
Semi major axis:	7061.998 km
Anom period:	98.496459 min
Apogee:	713.846 km
Perigee:	693.370 km
Ref perigee:	2762.26694235
	Thu Jul 25 06:24:23.819 1985 UTC
Beacon:	145.8260 MHz

Satellite	RS-5
Catalog number:	12999
Epoch time:	85192.66782482
	Thu Jul 11 16:01:40.64 1985 UTC
Element set:	254
Inclination:	82.9601 deg
RA of node:	291.6357 deg
Eccentricity:	0.0009847
Arg of perigee:	24.5501 deg
Mean anomaly:	335.6025 deg
Mean motion:	12.05060697 rev/day
Decay rate:	4e-08 rev/day ²
Epoch rev:	15685
Semi major axis:	8033.807 km
Anom period:	119.496056 min
Apogee:	1667.209 km
Perigee:	1651.387 km
Ref perigee:	2748.67344867
	Thu Jul 11 16:09:45.965 1985 UTC

Satellite	RS-7
Catalog number:	13001
Epoch time:	85214.16832929
	Fri Aug 2 04:02:23.650 1985 UTC
Element set:	210
Inclination:	82.9598 deg
RA of node:	274.8115 deg
Eccentricity:	0.0020845
Arg of perigee:	260.8587 deg
Mean anomaly:	99.0116 deg
Mean motion:	12.08694160 rev/day
Decay rate:	4e-08 rev/day ²
Epoch rev:	15992
Semi major axis:	8017.688 km
Anom period:	119.136838 min
Apogee:	1676.788 km
Perigee:	1643.362 km
Ref perigee:	2770.14557480
	Fri Aug 2 03:29:37.662 1985 UTC

Satellite	RS-8
Catalog number:	12998
Epoch time:	85204.67787195
	Tue Jul 23 16:16:08.136 1985 UTC
Element set:	331
Inclination:	82.9583 deg
RA of node:	287.9067 deg
Eccentricity:	0.0020139
Arg of perigee:	53.8931 deg
Mean anomaly:	306.3983 deg
Mean motion:	12.02954566 rev/day
Decay rate:	4e-08 rev/day ²
Epoch rev:	15802
Semi major axis:	8043.188 km
Anom period:	119.705269 min
Apogee:	1694.990 km
Perigee:	1662.594 km
Ref perigee:	2760.69024928
	Tue Jul 23 16:33:57.537 1985 UTC

Satellite	OSCAR-9
Mon Aug 12 00:14:13.769 1985 UTC:	
Ascending node at -111.0	
Nodal period: 94.33206 min	
Longitude increment:	
23.580464 deg w/orbit	
Element set 781, epoch:	
Sat Aug 3 02:24:57.846 1985 UTC	

Satellite	OSCAR-11
Mon Aug 12 01:00:20.612 1985 UTC:	
Ascending node at -45.9	
Nodal period: 98.55474 min	
Longitude increment:	
24.638251 deg w/orbit	
Element set 80, epoch:	
Thu Jul 25 05:56:04.70 1985 UTC	

Satellite	RS-5
Mon Aug 12 01:12:30.139 1985 UTC:	
Ascending node at -64.0	
Nodal period: 119.55248 min	
Longitude increment:	
30.015089 deg w/orbit	
Element set 254, epoch:	
Thu Jul 11 16:01:40.64 1985 UTC	

Satellite	RS-7
Mon Aug 12 00:26:25.255 1985 UTC:	
Ascending node at -57.6	
Nodal period: 119.19354 min	
Longitude increment:	
29.925292 deg w/orbit	
Element set 210, epoch:	
Fri Aug 2 04:02:23.650 1985 UTC	

Satellite	RS-8
Mon Aug 12 01:20:34.969 1985 UTC:	
Ascending node at -63.2	
Nodal period: 119.76153 min	
Longitude increment:	
30.067402 deg w/orbit	
Element set 331, epoch:	
Tue Jul 23 16:16:08.136 1985 UTC	

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